

NEW AUSTRALIAN BEES, IN THE COLLECTION OF THE BRITISH MUSEUM.

BY T. D. A. COCKERELL.

Paracolletes roseoviridis, n. sp.

♂. Length about 8 mm.; in all respects very close to *P. carinatus*, Ckll. (from Queensland), but differing thus: more robust, with a broader abdomen; head, thorax, and abdomen yellowish green instead of blue-green, the abdomen with the hind margins of the first two segments, and all the segments beyond, suffused with a rosy tint, which covers the fourth and fifth segments with a rich glow, and shows a little purple; stigma more brightly coloured; second submarginal cell less narrowed above; second recurrent nervure joining third submarginal cell a little distance from its end (at its end in *carinatus*); area of metathorax not only transversely carinate, but also with conspicuous transverse grooves or deep striae, especially just below the keel; hind tibiae and anterior tibiae in front, ferruginous, but the middle tibiae, and anterior tibiae behind, dark; hind femora ferruginous, with the basal half strongly suffused with black. Other characters are: hair of face and thorax above light fulvous or orange-tinted, but that of vertex long and grey-black; flagellum brownish beneath, the last joint a little rufescent; b. n. meeting t. m.; first r. n. joining second s. m. at its middle; wings clear; tarsi ferruginous; lateral pieces of genitalia shaped rather like the end of a finger seen in outline, fuscous basally and subhyaline apically; median piece with its rounded apical part dark reddish centrally, and hyaline at the margins; nearly the lower half of clypeus black, but the rest green.

Hab. W. Australia, 68.6. The numbers cited are the accession numbers of the Museum.

Halictus dampieri, n. sp.

♀. Length about 6 mm.; head and thorax dark olive-green, the front and mesothorax dullish, with a satiny lustre; apical part of mandibles reddish; antennae entirely dark; clypeus shining black, with a few punctures, except its upper margin, which is broadly green; tegulae rufous, blackened basally; area of metathorax large but not well defined, coarsely granular, with an inconspicuous and minute subreticulate sculpture; wings quite clear, brilliantly iridescent, stigma and nervures dark fuscous; b. n. falling some distance short of t. m.; first r. n. meeting second t. c.; third t. c. and second r. n. very weak; legs black, with white hair, yellowish on under side of tarsi; claw-joints ferruginous; hind spur with short stout spines; abdomen dark green, practically hairless, except at the apex, though there is a fringe of hair along the lateral margins, at the dorso-ventral suture. With the compound microscope, the front and mesothorax are seen to be very minutely tessellate all over, with very few scattered shallow punctures; the area of metathorax is evidently reticulate in the middle, the reticulations weakening and giving way to spots and dotted striae laterally; the surface of the abdomen is impunctate, and covered

all over with very minute cross-striæ, which are here and there joined by short lines, like the elongate cells in the stem of a plant.

Hab. Queensland (Gilbert Turner ; Ridg. 5. 91, 706). Allied to *H. floralis*, Sm., but readily known by the dark colour of the thorax. From *H. flindersi* and *H. murrayi* it is readily known by the granular (not coarsely wrinkled) appearance of the area of metathorax. It will be observed that this and the following species of *Halictus* are named after Australian explorers.

The genus *Halictus* is so large, and many of the species are so much alike, that the ordinary methods of description are often unsatisfactory. I find that the use of the compound microscope reveals details of sculpture which are of great assistance in defining the species, and it seems that this method of examination should be generally employed.

The small group of Australian species having metallic (blue or green) colours on the thorax exhibits the following microscopical characters :—

(1.) *Sculpture of front.*—The front in *H. dampieri* is minutely tessellate, with very few shallow punctures ; in *H. flindersi* and *H. murrayi* it is coarsely striate, but with this important difference, that in *flindersi* the striæ are transverse just below the central ocellus, and just below this is a delta-shaped space without regular striæ ; whereas in *murrayi* the striæ run right down from the central ocellus, covering the surface.

(2.) *Sculpture of mesothorax.*—In *H. dampieri* minutely tessellate, with very few scattered punctures ; in *H. flindersi* ♀ minutely tessellate, with short transverse plicæ at the places of insertion of the hairs, becoming more distinct in the ♂, which has quite long and very distinct plicæ, more or less oblique. In *H. murrayi* and *H. urbanus baudinensis* the mesothorax is coarsely microscopically tessellate, with numerous distinct punctures superimposed. For the most part these punctures are about as far apart as the breadth of one, or perhaps a little more distant.

(3.) *Sculpture of second abdominal segment.*—In *H. dampieri* and *H. flindersi* transversely striatulate, with oblique cross-lines, rather more numerous in the latter. *H. flindersi* also has some very faint punctures about the middle.

Halictus flindersi, n. sp.

♀. Length 6 mm. or a little more ; head, thorax, and abdomen shining purple-blue, the upper part of the clypeus and the anterior part of the mesothorax peacock-green, and the face in general more or less green ; pubescence white, long, and abundant, the hairs with curled ends, on the under side of the abdomen, but elsewhere only moderately abundant ; apical half of mandibles dark reddish ; antennæ dark, the flagellum dull reddish apically beneath ; mesothorax shining, with the median impressed line distinct ; metathorax truncate, the truncation with a sharp edge, the area strongly longitudinally (antero-posteriorly)

ridged; legs black, with quite abundant greyish-white hair, that on tarsi beneath yellowish, the basal joint of hind tarsi with a conspicuous little orange brush at its apex; hind spur with three strong teeth; tegulæ shining piceous, more rufous behind; wings clear; stigma and nervures fuscous; stigma very large; basal nervure very strongly bent, falling a rather long distance short of t. m.; first r. n. meeting second t. c.; second r. n. and third t. c. subobsolete; abdomen shining, almost free from hair above except apical segment, which is very hairy; no hair-bands or patches.

♂. Length scarcely over 5 mm., more slender; abdomen darker, little metallic; thorax greener, but vertex dark blue; clypeus without yellow or white; antennæ coloured as in female.

♀, var. a. Mesothorax and scutellum entirely Prussian-green.

Hab. Queensland (Gilbert Turner, Seaf. 1. 90; 440 and 439). Both sexes, and the two forms of the female, were evidently taken at the same time and place.

Halictus murrayi, n. sp.

♀. Length about 5 mm.; head and thorax dark blue, granular, and little shining; clypeus largely purplish; anterior part of mesothorax rather shiny, with blue-green tints; legs and abdomen piceous or brown-black; pubescence white, short and not dense, not forming bands or patches on the abdomen; apical part of mandibles reddish; antennæ black as far as third joint (the rest broken off); head broad; area of metathorax with strong ridges, the intervals wrinkled; tegulæ small, reddish; wings clear, faintly dusky apically, nervures and stigma very dark brown; stigma very large; b. n. falling a long way short of t. m.; first r. n. meeting second t. c., but a little on the outer side; second r. n. and third t. c. very weak; abdomen with much white hair beneath.

Hab. Adelaide River (J. J. Walker, 5138). Structurally allied to *H. urbanus baudinensis*, but that has the tegulæ, tibiæ, and tarsi clear red, which is not at all the case in *murrayi*. There is also some resemblance to *H. inclinans*, Sm., and *H. limatus*, Sm.

The following series of species has the thorax black, not metallic* :—

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| All the tibiæ and tarsi clear ferruginous; hind margins of abdominal segments more or less pallid or reddish | 1. |
| Not so; legs dark, and abdomen without colour-bands | 2. |
| 1. Larger, abdomen with broad reddish bands (Melbourne) | |
| | <i>bicingulatus</i> , Sm., ♀. |
| Smaller, abdomen with obscure bands (Adelaide) | <i>oxleyi</i> , Ckll. |

* While on black *Halictus*, I will take the opportunity of stating that *Lucasius*, Dours, the name of a subgenus of these bees found in Europe, is a homonym, and may be altered to *Lucasiellus*. The first use of the name *Lucasius* was in Crustacea (1859).

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| 2. Abdomen with distinct hair-bands, or lateral patches at the bases of the segments | 3. |
| Abdomen without hair-bands or patches. Spp. to be treated later. | |
| 3. Size very small | <i>lumei</i> , Ckll. |
| Size medium | 4. |
| 4. Male; more hairy; area of metathorax rugoso-reticulate | <i>lanuginosus</i> , Sm. |
| Females; less hairy; area of metathorax striate | 5. |
| 5. Thorax very coarsely sculptured (Victoria) | <i>gilesi</i> , Ckll. |
| Thorax finely sculptured (Hobart, Tasmania) | <i>representans</i> , Sm. |

(To be continued.)

A BUTTERFLY HUNT IN THE PYRENEES.

BY H. ROWLAND-BROWN, M.A., F.E.S.

(Concluded from p. 249.)

The collecting ground here is not easy to discover at once, so much have the market and villa gardens encroached upon the heaths of late years. A morning at Anglet was wasted in the attempt to find a suitable country, and it was more by accident than intention that I struck a really good locality to the south of the town on the road to St. Jean de Luz, and hard by the Bois de Boulogne. I spent an afternoon and morning on the boggy slopes which extend from the pine woods to the bamboo swamps, now more or less composed of oozing mud. Among the heather *Satyrus dryas* was flapping heavily, while *S. arethusa* was enjoying a sun-bath wherever there was an interval of dry sand. But *Canonympha ædippus*, which haunts the damp and shady hollows, was nowhere to be seen. One worn female, however, which I kicked up from the grass, revealed the fact that I was too late for the species, and the same may be said of *Heteropterus morpheus*, for, though I took a dozen or so of these odd butterflies, they were nearly all worn to rags, and therefore liberated. *Lampides bæticus*, again, presented the same lamentable appearance, but among a host of *Cyaniris argiolus* I took a splendid fresh male *Lycena alcon*, for which Biarritz is not given as a locality by M. Rondou, though Mr. Elwes mentions it among his captures there in July, 1886. The next day the weather broke up, and, as there seemed no chance of an immediate improvement, I turned northwards on the 5th, well satisfied with the results of my wanderings, both entomological and otherwise. Not counting varieties and local forms, M. Rondou includes 158 species in his catalogue of the Rhopalocera of the Pyrenees. I took or observed 109 in what was little more than a fortnight's collecting, made up as follows:—